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Mood disorders are pervasive among community college students and can put them at higher risk for developing more severe disorders and academic failure. Mindful exercise, including yoga, Tai Chi, and others has been shown to improve mood within this population. Therefore, more research is necessary to better understand the relationship of regular mindful exercise to the perception of mood in community college students. The purpose of this study was to evaluate the influence of participation in mindful exercise courses on community college students' perception of perceived stress and general mood over a 16-week semester. Eighteen students (13 female, and 5 male) participated in the study and completed the courses in Fall 2018. Measures included pre-mid- and post-study surveys measuring participants' self-perception of their general mood, stress, and physical activity. Results showed positive, although not statistically significant, trends in participants' perception of improved mood and decreased feelings of stress and fatigue. Findings suggest the practice of mindful exercise can positively influence community college students' perceived stress and mood. Further study is needed to explore other methods of incorporating mindful exercise into the community college environment in both the academic and non-academic settings.

THE INFLUENCE OF MINDFUL EXERCISE ON MOOD STATE AND PERCEIVED STRESS IN COMMUNITY COLLEGE STUDENTS

by

David John Opon

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Approved by

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APPROVAL PAGE

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To my 2015 cohorts, we hold a special bond that will continue for a lifetime. Thank you for sharing talents and friendships. Finally, to my wife Kathie and sons Aaron and Christopher, I cannot appropriately express my love and appreciation for your support through these past four years.

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CHAPTER I

PROJECT OVERVIEW

College students in the United States are struggling with unprecedented levels of mental health conditions (Prince, 2015). Eagen et al. (2014) report that first-year college students display the lowest level of emotional health in 25 years. Furthermore, 88% of college students report feeling overwhelmed; 84% exhausted; 64% overwhelming anxiety; and 55% hopeless (ACHA-NCHA, 2018). Increases in mental health conditions have been reported across all academic institutions. Yet, it is especially pervasive at community colleges. Six million or nearly 50% of community college students show symptoms related to one or more mental health conditions; a rate considerably higher than similarly aged students at four-year institutions Adding to this disparity, community colleges have fewer available mental health and counseling resources than their four-year counterparts (Eisenberg, Broton, Ketchen, Lipson, & Goldrick-Rab, 2016). Lack of mental health resources puts community college students at higher risk for developing more severe mental health disorders which can lead to greater academic jeopardy as mental health disorders are associated with lower grade point average and a higher likelihood of dropping out of college (Active Minds, 2017; Beiter, et al, 2016).

Mindful exercise is an intervention that could help improve perception of mood and stress in community college students (Morrison, Goolsarran, Rogers & Jha, 2014).

Mindful exercises such as yoga, qigong, Tai Chi, walking, and even general stretching have been reported to lower anxiety, improve attention control, and enhance mood (Falsafi, 2016; Tsang, 2004). While numerous studies support the practice of mindful exercise to improve mood, research is sparse on mindful exercise within the academic setting (Call, Miron & Orcutt, 2013). The high rate of mood disorders exhibited by community college students, along with insufficient mental health services, demonstrates a critical need exists to further assess the influence of mindful exercise on the mental health of community college students (Katz, & Davison, 2014).

Background Literature

The onset of most lifetime mental health disorders, such as anxiety, occurs before or during the traditional college age group of 18–24 years (Watkins, Hunt, & Eisenberg, 2011). It is estimated that one-in-four people under age 25 are living with anxiety (Watkins, Hunt & Eisenberg, 2011). Anxiety is also considered a central risk factor that contributes to both psychological and academic distress and recently surpassed depression as the number one mental health issue for college students (Eagan et al., 2014; Bergen-Cico, Possemato, & Cheon, 2013).

While mood disorders exist among students at all academic institutions, little research has been conducted to understand the underlying issues specific to community colleges and their students (Eisenberg et al., 2016). Factors that contribute to the rise and frequency of mood disorders in this population include increased access to college, higher poverty, pre-existing mental health conditions, greater student diversity, and

language barriers (Eisenberg et al., 2016; Vinson, 2013; Watkins, Hunt, & Eisenberg, 2011). In addition, many students once enrolled, find they are ill-equipped for the academic and social challenges of higher education which as a result significantly contributes to student anxiety and stress (Kruisselbrink Flatt, 2014).

Disparity in Mental Health Services

Fewer than 13% of community colleges provide mental health counseling services for students compared to 56% of four-year colleges and universities (ACCA, 2018). Most community colleges do not have any mental health counselors on staff, and among those that do, the ratio of counselors to students is 1 to 3,000, compared to 1 to 1,600 at four-year institutions (Eisenberg et al., 2016). The consequence is many community college students with an existing, or who develop, a mental health condition will go untreated or undiagnosed leading to more severe mental health conditions and the likelihood of them struggling alone. Eisenberg and Goldrick-Rab (2016) reported that 23% of community college students are experiencing the most severe frequency of depressive symptoms, as compared to 11% of four-year students

Yet less than 20% of college students utilized available mental health services (Bergen-Cico, Possemato, & Cheon, 2013), with community college students having the lowest rate of help-seeking (SAMHSA, 2018). One explanation is that college students often underestimate the severity of their condition and attempt to deal with their mental health issues on their own and often unsuccessfully. To understand this phenomenon, Biddle and colleagues (2007) developed a model called the Cycle of Avoidance (COA).

In COA, young adults deny the existence of a mental health issue rather than trying to resolve it. This leads to increased anxiety which causes more avoidance even as symptoms become more severe.

Mindful Exercise and Mood

Breaking destructive patterns like the COA requires a conscious decision to reframe one's thoughts and feelings. Mindfulness can help by focusing thoughts on the present moment while acknowledging and accepting feelings and bodily sensations (Kabat-Zinn, 1990; Falsafi, 2016). The regular practice of mindfulness through meditation, body scans, and focused breathing has shown promise in helping college students cope with stress, anxiety and depression (Call, Miron & Orcutt, 2013).

Mindful exercise merges mindfulness practices with physical movement (La Forge, 2016). While mindfulness has been successfully incorporated in nearly any movement activity, it has been practiced more extensively in physical activities such as yoga, qigong, Tai Chi, general stretching, and walking (Emerson & Hopper, 2012; Falsafi, 2016; Telles et al., 2009; Tsai et al., 2003).

Each of these activities integrates physical movement and breathing with meditative practices and intention. This combination of mindful physical activity has been reported to lower anxiety, increase attention control and improve general mood (Falsafi, 2016; Sharma & Haider, 2015). The regular practice of yoga helped individuals calm both their mind and body, lower state anxiety in adults, and decrease anxiety, depression, and stress levels in college students (Falsafi, 2016: Emerson & Hopper, 2012;

Saeed, Antonacci, & Bloch, 2010; Telles et al., 2009). A 12-week yoga intervention by Streeter and colleagues (2010) showed yoga was associated with greater improvements in mood and anxiety than a metabolically matched walking exercise.

As with yoga, qigong, Tai Chi and Pilates also incorporate movement, posture, breathing, and awareness. Qigong is often referred to as "moving meditation" (Qigong, 2017) and Tai Chi as art embracing the mind, body and spirit (Tai Chi for Health Institute, 2017). Pilates focuses on the mastery of control, based on the ideal of attaining a complete coordination of body, mind, and spirit (Adams, Caldwell, Atkins, & Quin, 2012).

Scientific research on the effect of qigong, Tai Chi and Pilates to reduce anxiety is limited, yet emerging trends indicate a positive association. Yin and Dishman (2014) found qigong and Tai Chi to have small to moderate effects in lowering anxiety while Tsai et al. (2003) found a 12-week Tai Chi training reduced both state and trait anxiety in participants. A 15-week Pilates course was shown to increase mindfulness in college students resulting in improved mood and lower levels of perceived stress (Caldwell, Adams, Quin, Harrison, & Greeson, 2013; Caldwell, Harrison, Adams, Quin, & Greeson, 2010).

Other studies indicate that low-exertion, mindful exercise with focused breathing can also enhance mood and may improve psychological functioning. Gotink and colleagues (2016) reported that mindful walking in nature improved both mindfulness and positive affect. Netz and Lidor (2003) compared mindful versus aerobic exercise and

found a single session of low-exertion mindful exercise enhanced mood as well as aerobic exercise. These results support mindful exercise as a viable approach to assist community college students to better self-manage their mental health, experience less perceived stress, and become more productive students.

Purpose Statement

The purpose of this research was to evaluate the influence of mindful exercise courses taught at a community college on community college students' self-reported perception of stress and mood state. The central hypothesis was that participation in regular mindful exercise would lower perceived feelings of stress and improve overall perception of mood in community college students. By demonstrating mindful exercise as an effective intervention in managing perceived stress and mood, a framework can be created where new opportunities for increased participation in mindful exercise can be established and made more accessible to community college students. Greater access to mindful exercise can allow community college students to better self-manage their mental health. The following specific aim was addressed:

Specific Aim

Evaluate the influence of mindful exercise courses on perceived stress and mood state in community college students.

Methods

Students in two courses based in mindful exercise and taught at a local community college participated in the investigation of the impact of regular mindful

exercise on perceived stress and mood state. Perceived stress and mood state were assessed through questionnaires administered at the beginning, middle and end of the 16-week semester.

Participants

Upon Institutional Review Board approval, participants were recruited from the enrollments of two, one-credit hour mindful exercise courses taught at a community college during the Fall 2018 semester. Course A (Appendix A) offered a broad range of mindful exercises derived from the disciplines of yoga, Pilates, Tai Chi, qigong, traditional stretching and meditation, while course B (Appendix B) focused primarily on the principles of yoga. The final sample consisted of 18 female (n = 13) and male (n = 5) community college students. The age range was 18-59 years (M = 28.78 years; SD = 13.98). Fourteen students self-reported as Caucasian (female = 9, male = 5; three Hispanic/Latino (female = 3) and one Asian female.

From the sample, the class status was, 1st-year student (n = 1); 2nd-year student (n = 5); 2 or more years (n = 8); and non-degree seeking (n = 4). Participants were also asked about their previous experience with various mindful exercise. Most (n = 17) had some previous experience, primarily with yoga, through a structured class. A total of 13 participants (female, n = 10; male n = 3) completed all three surveys.

Measures

Perception of stress, mood state, and physical activity were assessed through online surveys administered through the Qualtrics software (Qualtrics, 2018) at pre-,

mid-, and post-study assessment (Appendix C). Each survey was accessible via computer, tablet, or smartphone. The post-survey included exploratory open-ended questions on overall perceptions of the course(s) in addition to assessments of perceived stress, mood state, and physical activity.

Perceived Mood. Participants answered the Profile of Mood States2-Short Form (POMS2-SF) (Heuchert & McNair, 2014). POMS2-SF is a 35-question assessment designed to measure psychological distress across seven mood states: fatigue-inertia, vigor-activity, tension-anxiety, depression-dejection, anger-hostility, and confusion-bewilderment. In addition, a Total Mood Disturbance (TMD) score was calculated by adding the sub-category totals for fatigue-inertia, tension-anxiety, depression-dejection, anger-hostility, and confusion-bewilderment and subtracting the vigor-activity total. Respondents used a 5-point scale ranging from 0 for "Not at All" to 4 for "Extremely" to rate each item over the past week. Reliability coefficients (Cronbach's Alphas) for the POMS2-SF subscales ranged from .82 to .96 (Heuchert & McNair, 2014).

Perceived Stress Scale. The 10-item Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983) was included to measure participants' perceived levels of stress over a seven-day period. Participants rated each question on a 5-point scale from 0 for "Never" to 4 "Very often". The PSS instrument has been shown to have good validity and reliability (Khalili, Ebadi, Tavallai, & Habibi, (2017).

Godin Shephard Leisure Time Physical Activity Questionnaire. Physical activity was assessed through completion of the Godin-Shephard Leisure-Time Physical

Activity Questionnaire (GSLTPAQ) (Godin, & Shephard, 1985). GSLTPAQ required the participants to self-recall any daily physical activity lasting 15 minutes or longer over the past seven-day period. Classifications included strenuous, moderate, and mild. A total activity score was then calculated through specific multiples for each classification. Previous studies have shown GSLTPAQ offers both high reliability and validity (Amireault & Godin, 2015; Godin, 2011).

Open-ended Exploratory Questions

Participants provided written responses to a series of open-ended questions. In all three assessments, participants were asked to identify their top three sources of stress; the top three ways they relieved stress, as well as how stress affected them. The post-study survey also included questions on how participants felt they had changed or not in the categories of physical, mental, emotional, social or in any other way. Participants were also asked to assess the course via a five-point Likert scale that ranged from 1=not at all, 2=very little, 3=somewhat, 4=moderate, and 5=very much in the areas of enjoyment, most important, and what they would use in their daily lives.

Analysis of Data

Changes in participant responses to the POMS2-SF (subcategories of fatigue-inertia, vigor-activity, tension-anxiety, depression-dejection, anger-hostility, confusion-bewilderment and TMD), PSS and GSLTPA obtained from the pre-, mid-, and post-surveys were analyzed using repeated measures ANOVA. Open-ended survey questions were reviewed by the primary investigator and a second individual, not associated with

the study. Similar responses were grouped together, then organized and coded under categories (Taylor & Gibbs, 2010; Thomas, 2006). All survey data were stored via the Box storage services integrated through MS Office 365 and administered by the University of North Carolina Greensboro. Open-ended responses were downloaded and electronically stored via the UNCG Box storage services.

Results

Mood States, Perceived Stress and Physical Activity

Repeated ANOVAs were performed on the subcategories of fatigue-inertia, anger-hostility, confusion-bewilderment, depression-dejection, tension-anxiety, vigor-activity, as well as Total Mood Disturbance (TMD)—a common calculation within POMS2-SF to describe overall mood state (Table 1). Results revealed a significant decrease for fatigue-inertia $F(2,24) = 3.494$ $p = .047$, with a large effect size ($\eta_p^2 = .226$) (Cohen, 1969; Richardson, 2011). Post hoc analysis revealed a significant change between pre-study and post-study measures $F(1,12) = 5.351$ $p = .039$. POMS2-SF subcategories of anger-hostility, tension-anxiety, and TMD each showed non-significant decreases with tension-anxiety and TMD a medium effect size. Similarly, vigor-activity means increased non-significantly across the three time points with a medium effect size. Confusion-bewilderment dropped from pre- to mid-survey, but increased slightly at post-study. Depression-dejection remained stable across all three assessments. PSS showed non-significant decreases, with a large effect size ($\eta_p^2 = .172$). Results from the GSLTPAQ remained consistent across the three survey periods and revealed no

statistically significant changes. GSLTPAQ measures also indicated study participants performed little strenuous exercise and were not generally physically active.

Table 1

Changes in POMS2-SF, PSS and GSLTPAQ Measures

	Pre	Mid	Post			
Measures	*M/SD*	*M/SD*	*M/SD*	*F*	*p*	η_p^2
POMS2-SF						
Anger	3.46/3.36	3.38/2.93	3.15/4.43	.041	.897	.003
Confusion	5.92/3.84	4.62/4.48	5.31/5.02	.761	.478	.060
Depression	3.23/3.72	2.92/3.62	3.23/4.40	.051	.859	.004
Fatigue	9.62 /5.08	7.46/4.63	6.38 /5.35	3.494	.047	.226
Tension	8.77/5.93	7.15/5.34	7.85/5.70	1.228	.311	.093
Vigor	8.62/2.75	8.62/2.60	9.85/3.48	1.222	.312	.092
TMD	22.38/20.50	16.92/19.80	16.08/26.39	.980	.390	.076
PSS						
PSS	19.92/7.25	18.15/6.89	17.15/6.99	2.492	.104	.172
GSLTPAQ						
GSLTPAQ	23.67/14.51	24.58/15.39	24.00/22.91	.013	.987	.001

Open-ended Exploratory Questions

Responses to open-ended questions on sources of stress, stress relief and effect of stress were collected during each survey assessment. For sources of stress and stress relief, the coded responses were tabulated for each survey and a combined total from all three surveys was reported. For stress effect, coded responses from all three surveys were tabulated and the top three identified stress effects were reported. Post-study questions on

participant change, what was most enjoyable, most important, and use daily were also coded into unique categories with those categories tabulated and reported.

Sources of Stress

Sources of stress were classified into the common categories of Academics, Work, Relationships, Financial, Health, Mental, Societal, and Other (Appendix D). Academic concerns were cited as the top stressor 39 times over the three surveys. Academic stressors included, school work, grades, and applying to schools. Work was the second most identified stressor mentioned 23 times. Relationships, including family, parents, and intimate relationships, was next, cited 17 times. Those sources of stress were consistent over the three surveys. Other reported stressors were Financial (money) and Mental (time management, making decisions, and new situations).

Stress Relief

Physical, Diversionary, and Social activities were identified as the top methods for relieving stress (Appendix E). Physical and Diversionary means were nearly equally reported (43 and 40 times respectively over the three surveys). Physical activities included yoga, general exercise (walking, swimming, running, and working out) and sleep. Diversionary methods encompassed a wide- variety of behaviors such as listening to music, watching television, movies, and You Tube, video games, reading, shopping, and food (eating and alcohol). Social means were mentioned 14 times and included hanging out with friends, venting, and playing with daughter. Other methods used were

Mental/Behavioral (meditation and breathing activities); Self-care (taking a bath/shower) and Creative (art, singing, sewing).

Stress Effects

The top reported effects of stress over the three surveys were Physical, Emotional, and Cognitive (Appendix F). Physical effects, such as headaches, stomach pain, increased blood pressure, and biting nails, were consistently the top reported stress effects. Feeling overwhelmed, anxious, and angry were the most cited emotional effects; while cognitive impairments included overthinking, making mistakes, and the inability to concentrate. For example, one participant wrote,

> I get very anxious and my stomach aches. If I get really stressed about a situation, I ignore it hoping it will go away, but it gets worse when unresolved. I'm not able to concentrate or sometimes sleep.

Post-Study Open-Ended Responses

In response to the question on whether participants changed as a result of taking a mindful exercise course, 7 of 10 (70%) of participants reported they improved physically, including greater flexibility balance, reduced pain and weight loss; 9 of 10 (90%) cited improved mental functions including better coping techniques, feeling more relaxed, calm, and energetic; and half of participants felt they were more emotionally balanced and better able to control stressful situations (Figure 1).

One participant wrote,

> I've used the breathing techniques we learned in class to help in real life situations, like before taking a big test. I found that it has helped me calm down my nerves and refocus.

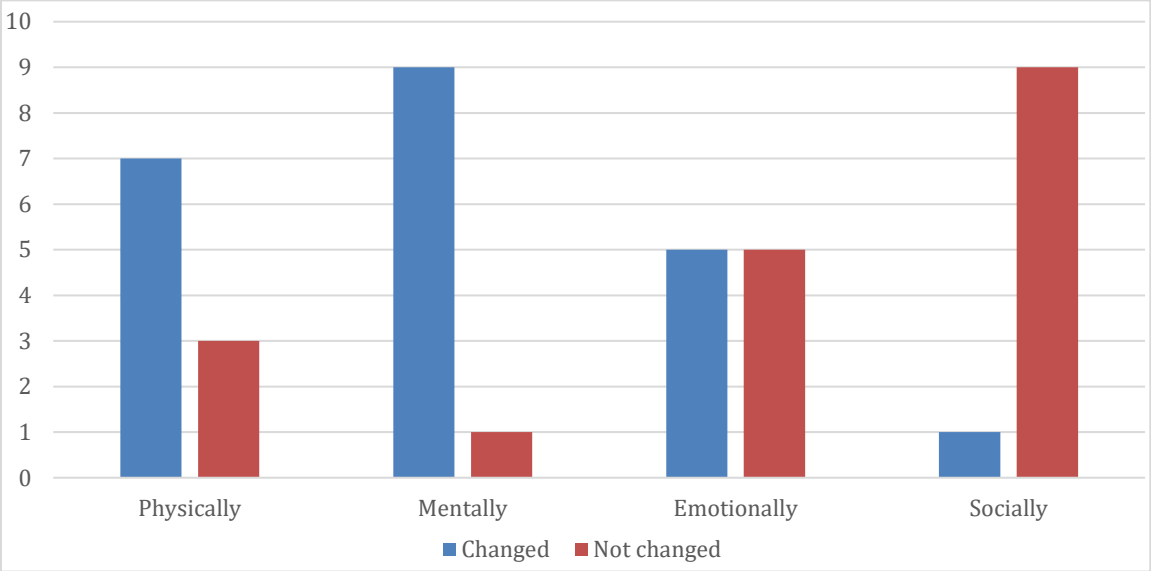

Figure 1. Number Reporting Change as a Result of the Course.

The final open-ended questions were designed to elicit responses about how the participant viewed the overall course in terms of enjoyment, what they found most important, and what they would use from the course in their daily lives.

The most common responses were learning yoga techniques, having physical activity that allowed for both a mental and physical break, and the feeling of relaxation. For example, one participant most enjoyed "A chance to not worry about anything while in the room. It was like an escape from all my stress that comes from my school life."

Participants reported learning how to relax their mind through yoga, Tai Chi, Pilates, breathing techniques, and the mind/body connection as the most important techniques learned from the course. In addition, most said that they would incorporate meditation and breathing techniques in their daily lives as well as yoga and stretching.

Discussion

The current study addressed the growing concern for mental health among community college students (Prince, 2015). It specifically investigated how mindful exercise could influence this population's perceived stress and mood. Statistical analysis did not reveal significant changes in mood state or stress outside of a significant statistical decrease in fatigue-inertia. However, many of the POMS2-SF mood states including anger-hostility, tension-anxiety, vigor-activity and TMD, exhibited positive changes with tension-anxiety, vigor-activity, and TMD a medium effect size. PSS decreased with a large effect size. Despite the lack of statistical significance, mindful exercise may have a positive influence on perceived stress and mood state (Morrison et al., 2014).

The absence of statistical significance was most likely attributed to the low sample size. From the initial pool of 35 students, 18 agreed to participant in the study, and 13 participants completed all three survey assessments. The low sample size reduced the statistical power of the study and therefore lessened the chance of detecting a true effect of mindful exercise. Age range of the sample (18–59 years; $M = 28.78$) may also have had an influence. Perceived stress and mood state could be related to age, and the

wide range of diverse life experiences in community college students likely increase variability in the data.

While the statistical analysis did not reveal significant changes, results from participant's responses to open-ended questions provided valuable insights as to what factors influenced participant's mood and perceived stress. As anticipated, the main identified source of stress was academics, followed by work and relationships. Academic issues were consistently the leading stressor over each assessment period (pre = 12, mid = 12, post = 15) which supports Beiter et al. (2016), who reported mood disorders correlated strongly with academic pressure to succeed. Academic stress also increased at post-study, an increase that appeared to coincide with approaching final exams. Work was the second major source of stress over each assessment period (pre = 8, mid = 9, post = 6) which was anticipated as 67% of community college students work and 32% work more than 35 hours or more per week (Community College Resource Center, 2019). Relationships were also a noteworthy stressor.

Responses at all three assessment periods suggested that stress impacted participants' physical well-being, emotional health, and cognitive abilities. Physical activity, such as yoga and general exercise, and diversionary techniques ranging from music, reading, and television to food and alcohol were cited as the top means of coping with stress. Of interest in the post-survey was the reported use of yoga and meditation to relieve stress, which may suggest that concepts taught in the class are being used by the

participants. This is further supported by participants' responses that they would use meditation, breathing techniques, and yoga on a daily basis.

Limitations

The current study acknowledges limitations in terms of recruitment, study timeframe and survey distribution. Future studies will want to ensure a larger sample size to provide higher statistical power. Study length is also a consideration; the16-week timeframe and three survey assessments may have contributed to the low response rate. Some students may have lost interest over the semester or found the pressures of school commitments and outside employment take priority over participation in the study. A shorter timeframe with pre- and post- assessments may help to increase responses and provide a better assessment of mood and perceived stress.

Survey distribution should also be considered. Administering surveys electronically was considered easier and more participant-friendly, but email distribution may not have been as effective as initially thought. Ideally, consideration should be given to having the surveys completed in the classroom or activity room setting.

Survey timing was also an issue. The surveys were planned to be administered during week one of the semester, week eight and week sixteen of the semester to create an even spacing of the surveys. An unforeseen consequence was that the mid- and post-study survey distribution coincided with the college's midterm and final exam schedules.

Conclusions

Although findings did not reach statistical significance, medium to high effect size for most POMS2-SF subscales and PSS, along with participant responses to open-ended questions, support continuing the study of mindful exercise within this population. This study holds promise that mindful exercise can influence perceived stress and mood state within community college students. Additional research is necessary to confirm these preliminary findings. Yet, some initial insight and directions can be taken. The open-ended responses offer awareness as to student stressors and how they respond to them. They also showed what the participants viewed as important and what components of the course they would continue to use. This information can be incorporated into the current course curriculum to tailor instruction to the identified needs of the participants, such as setting intentions that focus on school, work, relationships, and greater attention on meditation and breathing techniques.

CHAPTER II

DISSEMINATION

The plan for dissemination was to present these findings to the administration and physical education staff of a Chicago-area community college as part of a program review of the school's Mind/Body Fitness and Yoga and Beyond courses.

The presentation summarizes the project with the main objective to suggest how the findings and conclusions drawn could be incorporated into the curriculum of the two courses studied and/or used to develop new opportunities to establish mindful exercise offerings at the college

There are three main goals of the presentation. First is an overview of the current status of mental health issues impacting community college students. The second goal is a discussion of mindful exercise and its potential role to influence perceived stress and mood state. The final goal is to discuss how the results indicated that mindful exercise could be a viable intervention to assist community college students to better manage their mental health.

Presentation Details

The following is an outline of the PowerPoint presentation submitted to the college's Fitness Trainer Certification Program Advisory Committee, which consists of the members of the college's administration, faculty, staff, and invited guests. The

complete presentation is written in the first-person and subheadings provide references to specific PowerPoint slides (Appendix G).

Introduction (Slides 1 and 2)

Hello and thank you for allowing me to present my dissertation findings to you today. My name is David Opon and I am a doctoral candidate at the University of North Carolina Greensboro. Last summer, I approached the college about the possibility of me conducting my dissertation study. I was interested in the role mindful exercise has on the perceived stress and mood state of community college students and felt that the Body/ Body Fitness and Yoga and Beyond courses met my research criteria. With support from the college, I conducted my study during the Fall 2018 semester and today I present my findings.

Current Mental Health Status (Slides 3, 4, and 5)

Those of you who teach college courses are well aware of the growing mental health concern in our schools. Recent studies show college students are struggling with unprecedented levels of mental health conditions (Prince, 2015). A 2016 study reported current incoming freshman exhibit the lowest level of emotional health in 25 years (Eagen et al., 2014). Here are a few eye-opening numbers: 88% report feeling overwhelmed; 84% exhausted, 64% overwhelming anxiety, and 55% hopeless (ACHA-NCHA, 2018). These types of numbers are being seen across all academic institutions but are significantly higher at community colleges. Nearly half of all community college students, some six million, show symptoms of one or more mental health conditions.

Alarming yes, but not necessarily unpredicted (Eisenberg et al., 2016). The onset of most lifetime mental health disorders, such as anxiety, occurs before or during the traditional college age years of 18–24 (Watkins, Hunt, & Eisenberg, 2011). Today, anxiety is the most reported mental health condition among college students (Eagan et al., 2014; Bergen-Cico, Possemato, & Cheon, 2013). This translates into an increased the risk of developing a more severe condition and academic jeopardy, as mental health conditions are linked to lower GPA and a higher likelihood of dropping out of college (Active Minds, 2017).

Contributing Factors (Slides 6 and 7)

Numerous factors contribute to the decline in student mental health (Eisenberg, et al., 2016). Some, like students with a pre-existing mental health condition, seem obvious. But, other factors like providing greater access to college are less clear. While providing more opportunities for a college education would seem positive, many young people entering college are unprepared for the rigors of higher education. Their unpreparedness can escalate stress and anxiety (Kruisselbrink Flatt, 2014). Another is the higher enrollment of low-income students which can create an environment where students with limited financial resources have less access to necessary school materials. While highly touted, diversity can cause students from minority groups to have trouble assimilating to the college experience and end up feeling isolated.

Inadequate Counseling Services (Slides 8 and 9)

To fully view the mental health problem facing community colleges, we also have to assess the lack of counseling resources. Fewer than 13% of community colleges provide counseling services compared to 56% at four-year schools (ACCA, 2018). Combined with the unique factors influencing their mental health, inadequate counseling services puts these students at higher risk for having their mental health condition go untreated or diagnosed. This is particularly true at community colleges, where 23% of students are experiencing the most severe frequency of depressive symptoms, as opposed to 11% at four-year colleges (Eisenberg & Goldrick-Rab, 2016). Yet, even when services are available, less than 20% of students utilized those services, with community college students having the lowest rate of help-seeking (Bergen-Cico, Possemato, & Cheon, 2013).

Cycle of Avoidance (COA) (Slide 10)

A possible explanation for not seeking help is the Cycle of Avoidance (COA) model (Biddle, Donovan, Sharp, & Gunnell, 2007). In COA, the student denies the existence of the condition rather than seeking help. The student either ignores the problem or tries to self-medicate. This leads to greater anxiety, more avoidance and the cycle spirals until the symptoms become more severe or the student begins to fail academically. Breaking patterns like COA requires a conscious decision to reframe one's thoughts and feelings. But most students do not have the resources or skills to do so.

Mindfulness and Mindful Exercise (Slides 11 and 12)

Mindfulness has been described as paying attention, on purpose and in the present. (Kabat-Zinn, 1990; Falsafi, 2016). Focusing on the moment is how an individual can begin to recognize emotional patterns, reframe thoughts, and untangle him or herself from harmful thoughts and feelings. Mindful exercise takes the mindfulness and merges it with physical movement. Mindful activities such as yoga, Pilates, Tai Chi, and Qigong have been shown to lower anxiety, improve attention control, and enhance mood (Falsafi, 2016; Sharma & Haider, 2015). Because mindful exercise requires little cost and no outside medications, it offers a potential intervention to help students better manage their mental health and alleviate the strain on community college counseling centers.

My Research, Rationale and Specific Aim (Slides 13 and 14)

The purpose for this study was to evaluate the influence of mindful exercise courses on community college students' self-reported perceptions of stress and mood state. My study examined two mindful exercise classes over the course of a 16-week semester. I expected that regular mindful exercise would lower student perception of anxiety and stress and improve overall mood by the conclusion of the semester. By demonstrating mindful exercise as an effective mental health intervention, I propose new opportunities for mindful exercise could be established and made more accessible to community college students.

Study Methods, Design and Data Analysis (Slides 15, 16, and 17)

My study consisted of pre-, mid-, and post-study surveys administered during weeks 1, 8 and 16. Each survey measured participant's perceived stress, mood state, and physical activity as well as open-ended questions on sources of stress, stress relief, and stress effect with questions about the course asked in the post-study survey. Repeated ANOVAs were conducted on perceived stress, mood state, and physical activity. Open-ended responses were collected and organized by common themes and then grouped into categories and coded by similar topics.

Demographics (Slides 18, 19, and 20)

Out of a possible 35 enrolled students, my final sample consisted of 18 participants: 13 females and five males. The age-range was 18-59 years; 14 were self-identified as Caucasian (female $n = 9$, male $n = 5$); three Hispanic/Latino (female n = 3), and one Asian female. There was one first year student; five second year students, eight with two or more years and four were non-degree seeking Fourteen had previous experience with yoga; six with Pilates and five with Tai Chi. All previous experiences were through a structured class.

Measures (Slide 20)

This slide shows mood state, perceived stress, and physical activity data. While there is only one statistically significant change in fatigue, mood state subcategories of anger, tension, vigor, total mood disturbance (TMD) and perceived stress scale all show positive changes. What is noteworthy are the medium and high effect sizes which

indicated that mindful exercise may influence mood state and perceived stress despite the small participant sample.

Open-Ended Questions on Stress (Slides 22, 23, 24, and 25)

The open-ended questions provided insight into what is causing community college students stress, what methods they used to cope with stress, and what effect stress had on them. As we might expect, Academics was the top stressor cited over the three surveys with work and relationships next. Academics included traditional school concerns such as grades, but also applying to schools which appears to be a unique stressor to community college students. Work was second. I'm sure most of us know community college students work but were you aware 67% of community college students not only work, but 32% work 35 or more hours (Community College Resource Center, 2019). Relationship concerns was third. Most participants used Physical or Diversionary methods to cope with their stress. These two means were mentioned nearly equally. Physical activities included yoga, general exercise and sleep. A wide variety of diversionary activities such as listening to music, watching different types of media, playing video games, reading, and shopping. Food and alcohol were also mentioned an indication of possible negative coping patterns. Participants used words like "zone out" or "escape" to describe diversionary activities. Social coping involved hanging out with friends, venting to others, and family. Other methods cited were Self-care practices such as taking a bath/shower, and Creative activities such as drawing/painting, singing, and sewing. Stress is affecting community college students Physically, Emotionally, and

Cognitively. Headaches, stomach pain, increased blood pressure, and biting nails were common physical issues, while feeling overwhelmed was the most identified impact on mood. Stress also seems to cause causing cognitive impairments like overthinking, making mistakes, and the inability to concentrate.

Opened-Ended Questions About Change (Slides 26 and 27)

The final survey asked if participants changed physically, mentally, emotionally, or socially as a result of the course. Seventy percent said they changed mentally and felt more relaxed and energetic. Ninety percent indicated that improved physically especially in terms of greater flexibility, balance and less pain. Half of the participants said they improved emotionally and were better able to cope with different situations.

Open-Ended Questions About Benefits (Slides 28, 29, and 30)

Overall, students enjoyed the courses. They liked learning yoga techniques and having physical activity that allowed for both a mental and physical break. The most important takeaways from the course were learning how to use yoga, Tai Chi, and Pilates with breathing technique to relax the mind, and gaining a better understanding the mind/body connection. Study participants plan to continue to use meditation, breathing techniques, and yoga in their daily lives. This appears to connect course enjoyment responses with what was cited as most important in the course.

Discussion (Slides 31, 32, 33, and 34)

This study addressed the growing mental health concern among community college students and whether mindful exercise could influence this population's

perception of mood and stress. If one were only looking for statistically significant results, I didn't have many. But despite the small sample size, there were promising trends across many of the measures and participant responses questions supported my hypothesis that mindful exercise could influence perception of stress and mood state. Responses to open-ended questions provided insight on the unique stressors impacting community college students. As educators, we can become more aware of these stressors and address them before they become more severe.

Conclusion and Action Plan (Slides 35 and 36)

The current curriculum of both PEH 120 and 122 provides appropriate experiences and resources to learn mindful exercise. Yet, I believe this study can provide additional curriculum focus. For example, knowing the main source of stress, the instructor can tailor meditations and intentions appropriately to address academics work or relationship issues. Additional mindful exercises could be incorporated into the PEH 120 course such as a class on mindful walking. Also, look for alternative mindful tools such as phone apps or websites, and videos to encourage continued mindful exercise after the course. Furthermore, the college may want to consider non-academic opportunities to increase mindful exercise for the entire student population. These may include offering a weekly or bi-weekly mindful exercise sessions open to the entire student body, creating a student-run mindful exercise club, or seeking collaborative events with the college's fitness center that can attract students not enrolled in either of the courses.

Questions (Slide 37)

Thank you. I am now open to any questions.

CHAPTER III

ACTION PLAN

With nearly half of all community college students showing symptoms of one or more mood disorders (Eisenberg et al., 2016), the objective of this research was to examine whether mindful exercise can be a viable option to assist community college students with better management of their mental health. While this study's statistical results were limited by the number of participants, the overall results showed promise that mindful exercise can serve this role.

Therefore, it is my plan to further explore mindful exercise and develop short and long-term goals to integrate and deliver effective mindful exercise interventions within the community college environment and the discipline of kinesiology. In addition, I plan to develop a future, larger-scale study that can further investigate the influence of mindful exercise interventions not included in the present study.

Initial Goals

My first level of professional influence will be to share my study findings with the administration, faculty, and staff at my college. My plan is to present at the professional development workshop held during the college's Professional Development program held in August 2019. The workshops are designed to share innovative educational concepts or programs that expand the mission of the college. I will submit my proposal during the

2019 Spring semester. A second option is to present at the annual EduCon workshop in February 2020. EduCon is a one-day program designed to present new and innovation topics to administration, faculty and staff.

In addition, I plan to disseminate my findings through various programs and services that support at-risk students. I have already met with some of the program directors and coordinators and will be meeting with others during the Spring 2019 semester. My involvement with each group will vary in range from individual presentations to longer-term commitments.

The Office of Student Activities (OSA) provides opportunities for students to develop outside of the classroom through educational, wellness, and social programs. I have already created and serve as an academic advisor of the student-run Practicing Mindfulness club. This club meets once per week and provides opportunities for mindfulness and mindful exercise activities for students both on and off campus. My goal is to incorporate my findings to provide more effective mindful exercise opportunities.

I further plan to meet, within the next year, with other club advisors and student leaders to collaborate activities that would introduce mindful exercise to a broader range of students. Targeted activities include the annual Welcome Week activities, Main Street (a two-day event held each semester to introduce clubs to the students), and the annual Health Fair. In addition, I will work with the director of OSA to identify student leaders who would train to become mindfulness ambassadors to promote mindful exercise activities at events such as new student orientations and the First-Year Student program.

Another area of dissemination is through the Disabilities Services office. Students with disabilities, especially learning disabilities, are often at higher risk for developing mental health conditions (Morgan, 2013). Therefore, I plan to present my findings at the annual Disabilities Awareness Day in October 2019, a day-long program of presentations and panel discussion that attracts individuals, schools, and organizations from across the local region.

The final dissemination for at-risk students is through the Office of Multicultural Student Affairs and its associated Federal TRIO program. TRIO is comprised of eight federal programs designed to provide services to underserved individuals. My plan is to be a presenter at the annual TRIO Day held in February 2020.

Long-Term Focus

My long-term goal is to improve academic pedagogy within the kinesiology courses taught at my community college. With the support of my colleague in the Natural Science and Physical Education department, my goal is to integrate the concepts of mindful exercise into the existing kinesiology curriculum. The identified courses will be Group Exercise, Introduction to Personal Training, Introduction to Exercise Science, and general conditioning classes.

My follow-up goal is to develop a supplemental module on mindful exercise that can be included and adapted into the existing curriculum of these courses. My long-term plan includes developing a one-hour academic mindful exercise course, similar to the two courses assessed in this study and have it available for the 2021 Fall semester. This

timeframe is reasonable to get appropriate approvals from the Illinois Community College Board. Eventually my ultimate goal is to present this to course proposal to the administration and curriculum committee to gain approval as a mandatory course for all first-year students.

A corresponding longer-term goal is to create and implement a new three credit-hour academic Psychology of Physical Activity course that would include mindful exercise within the curriculum. This course would then become required for the Personal Training Certificate, as well as the Associate of Science with emphasis in kinesiology degree. My goal is to have this course available by the 2022–2023 academic year.

Future Research

In order for the concept of mindful exercise to be an accepted and viable mental health intervention for community college students, there needs to be a commitment to additional research. The trends observed from this study have provided a window into the possibilities of mindful exercise, but more research, especially within the community college environment, is needed. Therefore, my ongoing professional research plan is to work independently, as well as to seek collaborative opportunities, on research that builds on this study. My initial focus is to conduct a similar study with a larger sample size and shorter frame to determine if more statistically significant results can be obtained. If so, the next step would be to develop a large-scale mindful exercise study that can be conducted across multiple community colleges.

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APPENDIX A

COURSE A: OVERVIEW

Major Course Concepts

1. To increase student's mind/body coordination for the purpose of enhancing perceived self-control/confidence.
2. To create exercise sequences that provide students with safe movement variety and recommended movement progressions, as well as a supportive environment to expand their movement experiences.
3. Introduction of basic concepts of mind/body awareness through practice of yoga, Pilates, stretching and meditation.

Course Topics/Interventions

Yoga

- Pantanjali's Yoga Sutras: Eight Limbs of Yoga
- Anatomy/Alignment and Props
- Surya Namaskar - Sun Salutation
- Earth/Moon Salutations
- Pranayama – The Life Force
- Hatha Yoga
- Power Vinyasa
- Ashtanga Yoga
- Yin Yoga
- Kundalini Yoga
- Slow Flow

Pilates

- Intro to Pilates
- Pilates Core
- Pilates Strength

PiYo

- Combining Pilates and yoga

Tai Chi

- Introduction to Tai Chi
  Principles of Stretching
- Incorporating proper stretching techniques with mindfulness

Mindfulness

- Listening to Your Body
- Meditation
- Mind/Body Fusion
- Samadhi

APPENDIX B

COURSE B: OVERVIEW

Major Course Concepts

- To increase students' mind/body/spirit coordination for the purpose of enhancing their perceived self-control, wellness and quality of life.
- Create safe and effective movement sequences; asana (postures), pranayama (breath work), mantra (chanting), and meditation.

Key Learning Outcomes

- Increase students' overall physical/kinesthetic awareness and enhance overall self-concept.
- Demonstrate general physical fitness and functional skill levels, including flexibility, mobility, static and dynamic balance, agility, stability, muscular strength/endurance, stillness and relaxation.
- Demonstrate general mental fitness levels including enhanced focus, calmness, stress management, confidence, and positiveness.

Course Topics/Interventions

- A Brief Overview of Yoga History
- Pantanjali's Yoga Sutras: Eight Limbs of Yoga
- The Bhagavad Gita
- Yamas – "Shall Not's" and the External World
- Niyamas – "Shall Do's" and the Inner World
- Pranayama – The Life Force
- Asana – Yoga in Movement
- Vinyasa - Yoga and Flow
- Surya Namaskar – Sun Salutations

Body Movements

- Forward bend
- Back bend
- Twists
- Standing balance
- Arm balance
- Inversions

Energy Flow

- Chakras
- Nadis
- Bandhas
- Mudras

Meditation

- Mantras
- Samadhi

APPENDIX C

ADDED SURVEY QUESTIONS

Note: This appendix includes only questions developed specifically for this study, and not the POMS2-SF, PSS, or GSLTPAQ measures.

Thank you for considering helping me with my dissertation survey. Please go to the link below to access the IRB-approved, stamped consent form to review the details of the study and participant criteria. Then, if you agree to participate, please click the "I agree to participate" button below to provide informed consent and access the survey.

I hope that you will help by completing the surveys. If you choose not to do so, that's fine.

Contact David Opon if you have questions. Thank you!

Informed Consent

- ○ I agree to participate
- ○ I do not agree to participate

Last four digits of your student ID
Please provide the last four digits of your student ID. This information will be used for coding purposes only.

Demographic Information

Age

Please provide your age _____

Gender

- ○ Male
- ○ Female
- ○ Other _____

Race

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or another Pacific Islander
- Caucasian
- Other _____

Class Status

- 1st year
- 2nd year
- More than two years
- Non-degree seeking

Years attending community college

- 1
- 2
- 3
- 4+

Description of Mindful Exercise

Mindful exercise combines the concept of mindfulness with focused physical activity such as yoga, Tai Chi, and Qigong. During these activities, the individual directs their thoughts inward with the intention of letting go of distractions and then redirecting their focus on sensations, breathing, and movements of the body.

Mindful Exercise Participation

Have you participated in any of the following mindful exercises?

Yoga

- Yes
- No

If yes, describe the setting (class, workshop, informal session) and your experience with yoga.

Tai Chi

- Yes
- No

If yes, describe the setting (class, workshop, informal session) and your experience with Tai Chi.

Qigong

- Yes
- No

If yes, describe the setting (class, workshop, informal session) and your experience with Qigong.

Pilates

- Yes
- No

If yes, describe the setting (class, workshop, informal session) and your experience with Pilates.

Other: Have you participated in other mindful exercise not listed in the previous questions?

- Yes
- No

If yes, describe the type(s) of mindful exercise, the setting (class, workshop, informal session) and your experience(s).

Sources of Stress/Stress Relief/Stress Effect

What are your main sources of stress? (list your top 3)

1.
2.
3.

How do you relieve your stress? (list your top three)

1.
2.
3.

How does stress effect you?

1.
2.
3.

Post-Study Open-Ended Exploratory Questions

Since taking this course have you changed?

Physically

- Yes
- No
- If yes, explain how _____

Mentally

- Yes
- No
- If yes, explain how _____

Emotionally

- Yes
- No
- If yes, explain how _____

Socially

- Yes
- No
- If yes, describe the setting (class, workshop, informal session) and your experience

Have you changed in any other way?

- Yes
- No
- If yes, explain how _____

Class Enjoyment

	Not at all	Very little	Somewhat	Moderate	Very much
How much did you enjoy the class?	○	○	○	○	○

Most enjoyed
What did you enjoy most from this class?

What you learned

	Not at all	Very little	Somewhat	Moderate	Very much
How much do you feel you learned lot from taking this class?	○	○	○	○	○

Most important
What was the most important thing you learned from the class?

Daily Life

	Not at all	Very little	Somewhat	Moderate	Very much
How much can you use what you learned in your daily life?	○	○	○	○	○

What from this class would you use in you daily life?

Thank you for participating in this study. If you would like to be entered for the chance to receive a $25 Amazon gift card for completing all three surveys, please fill out the attached gift card raffle sheet. Please fill provide your information including indicating with an "x" which course section you attended.

Gift Card Raffle Sheet

APPENDIX D

SOURCES OF STRESS

Major categories	*Meaningful Topics*
Academics	
	School in general
	Classes/Specific classes
	Grades/Exams
	Homework
	Applying to schools
	Pressure to succeed
	Having enough credits
Work	
	General work
	Teaching class
	Update certification
Relationship	
	Family
	Parents
	Intimate relationships
	People
Financial	
	Money
	General financial concerns
Health	
	Poor sleep
	Inconsistent exercise routine
	Inconsistent with nutrition
	Unexpected health problem
Mental	
	Uncertainty about the future
	Personal issues
	Time management
Societal	
	Politics
	Religion
Other	
	Jury duty
	Legal issues

APPENDIX E

STRESS RELIEF

Major Categories	*Common Means*
Physical	
	General exercise
	Yoga
	Walking/Running
	Swimming
	Sleeping
	Deep breathing
	Clean
	Bite my nails
Diversionary	
	Music
	Read
	Video games
	Television/movies
	Eating, wine
	Shopping
	Avoid or leave the situation
	Try not to procrastinate
Social	Talk with friends/family
	Go to a bar
Mental	
	Meditation
	Put things into perspective
	Procrastinate
Self-care	
	Bath/shower
	Nap
Creative	
	Paint/draw
	Sew with friends
	Cook

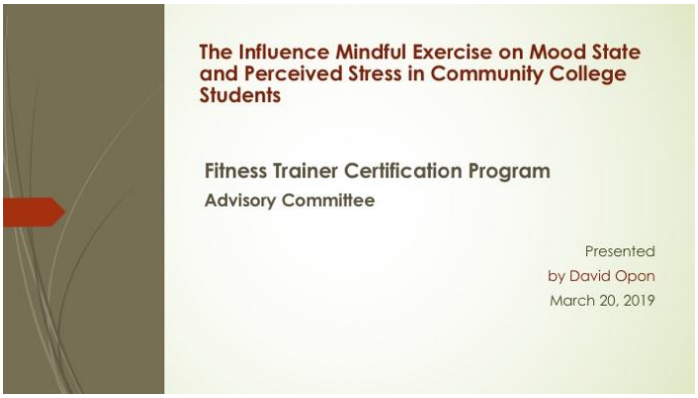
APPENDIX F

STRESS EFFECT

Major categories	*Meaningful topics*
Physical	Blood pressure and heart rate go up
	Stomach issues
	Headache
	Hair loss
	Neck pain
	Biting nails
	Poor sleep
	Eating
Emotional	
	Overwhelmed
	Anxious
	Sad/cry
	Angry
	Shut down
	Hold it in
Cognitive	
	Lose concentration
	Make mistakes
	Distracted
	Forgetful
	Get negative
Socially	
	Personal relationships
Avoidance	
	Ignore it
	No effect

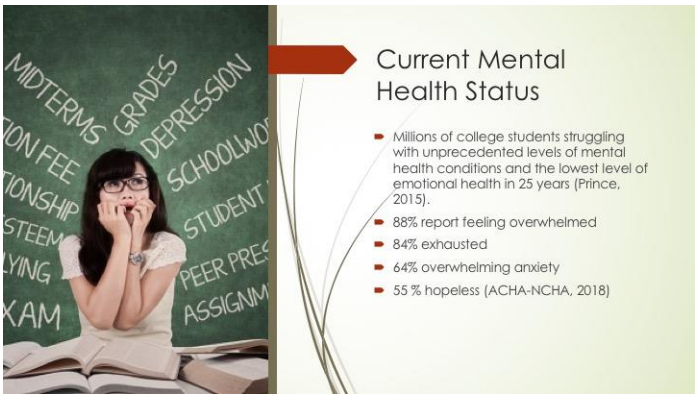
APPENDIX G

DISSEMINATION PRESENTATION

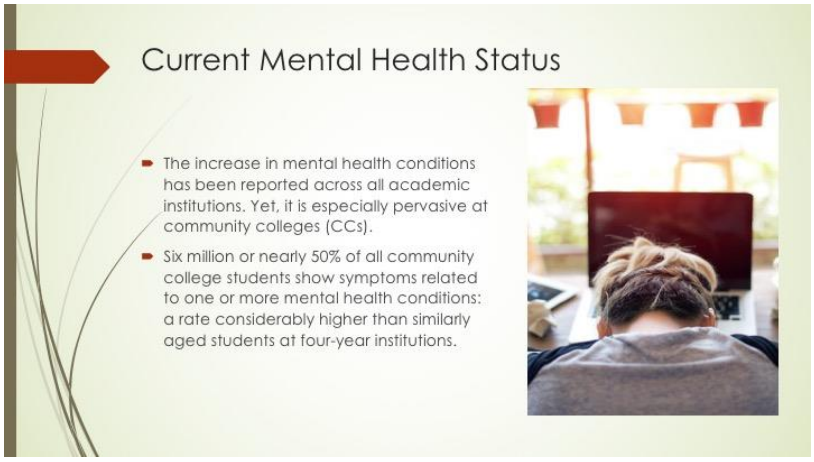


Slide 1

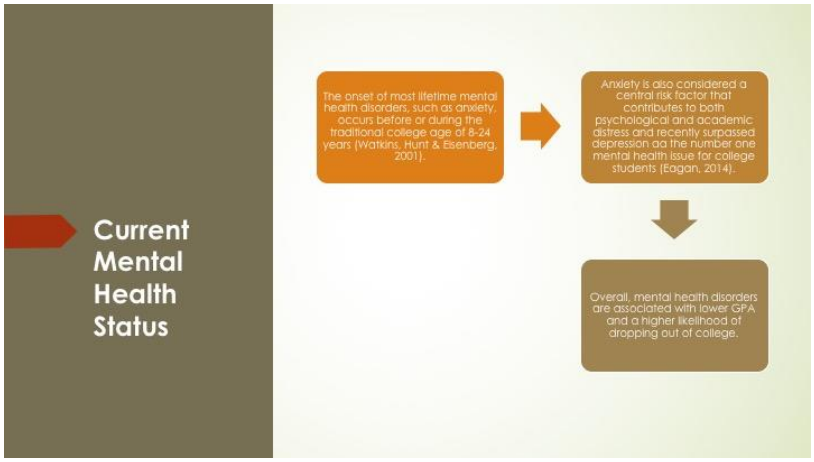
Slide 2



Slide 3



Slide 4



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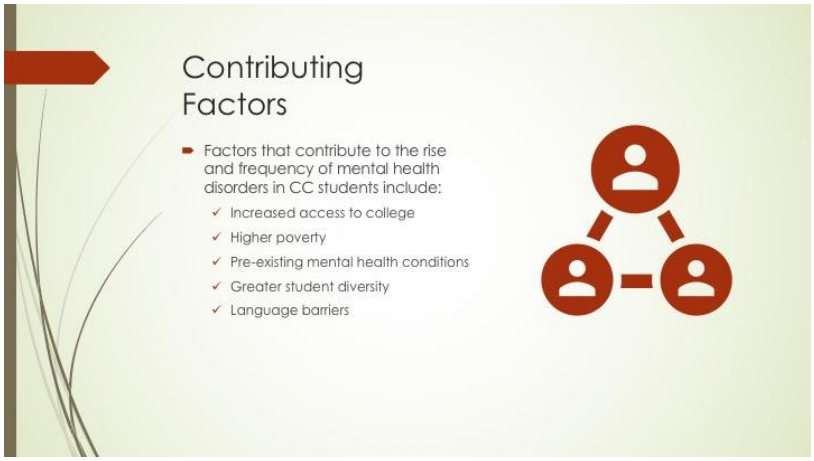


Slide 6

Contributing Factors

- In addition, once enrolled, many students find themselves ill-equipped for the academic and social challenges of higher education, which as a result, significantly contributes to student anxiety and stress (Kruisselbrink Flatt, 2014).

Slide 7

Inadequate Counseling Services

- Compounding the problem is that most CCs don't have adequate counseling resources and service than four-year institutions.
- Fewer than 13 % of CCs provide counseling services compared to 55% at four-year schools.

Slide 8

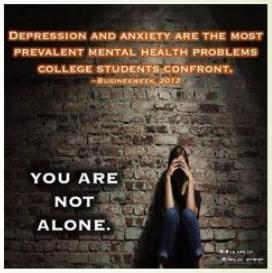
Inadequate Counseling Services

- Lack of resources puts CC students at higher risk for having a mental health condition go untreated or diagnosed leading to more severe mental health conditions and the likeliness of struggling alone.
- Eisenberg and Goldrick-Lab (2016) reported 23% of CC students are experiencing the most severe frequency of depressive symptoms, as compared to 11% at four-year schools.
- Yet, less than 20% of college students utilized available mental health services with CCs students having the lowest rate of help-seeking (SAMHSA, 2018).

Slide 9

Cycle of Avoidance (COA)

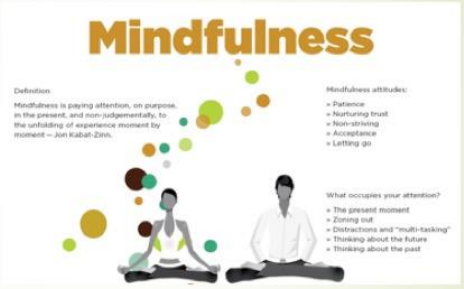
- The Cycle of Avoidance (COA) model may provide insight as to why students, when they finally seek help at university and college counseling centers, exhibit more severe mental health symptoms (Biddle, Donavan, Sharp & Gunnell, 2007).
- In COA, young adults deny the existence of illness rather than resolving it. This increases anxiety which causes more avoidance as the cycle continues even when symptoms become severe. (Watkins, Hunt, & Eisenberg, 2011).
- Breaking the destructive patterns of COA requires a conscious decision to reframe one's thoughts and feelings



Slide 10

Mindfulness and Mindful Exercise

- Mindfulness and mindful exercise are practices that can assist in recognizing, reframing, and untangling one's self from harmful thoughts and feelings.
- Mindful exercise merges mindfulness practices with physical movement.
- Activities such as yoga, Pilates, Tai Chi, Qigong, and mindful walking, have been shown to lower anxiety, improve attention control, and enhance mood (Falsafi, 2016; Emerson & Hopper, 2012).



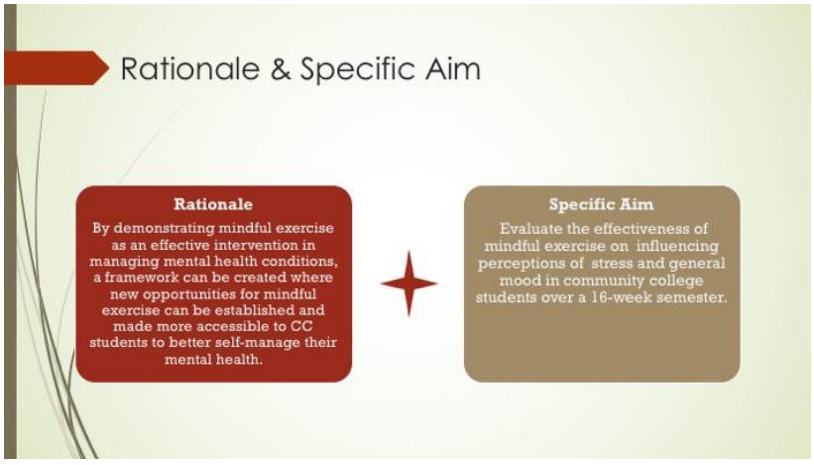
Slide 11

Mindful Exercise as a Solution

- These practices could potentially serve as a non-pharmaceutical intervention to assist CC students in becoming mentally healthier and more productive students and individuals.
- Alleviate the strain of limited CC counseling services (Falsafi, 2016; Emerson & Hopper, 2012).

Slide 12

Slide 13



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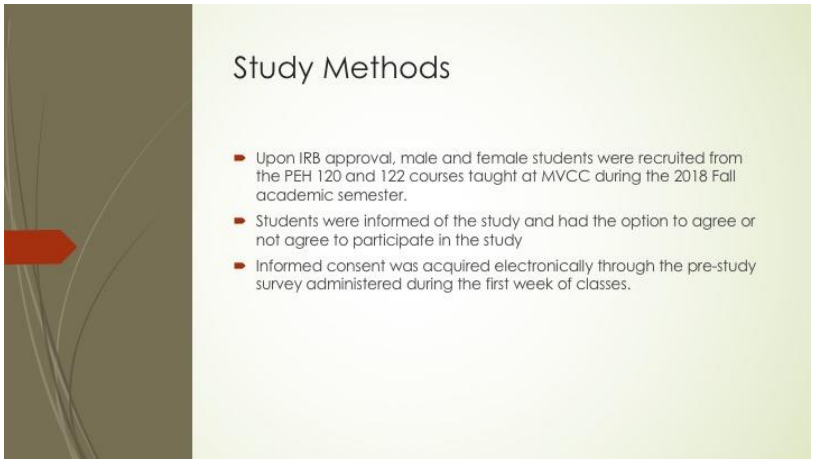

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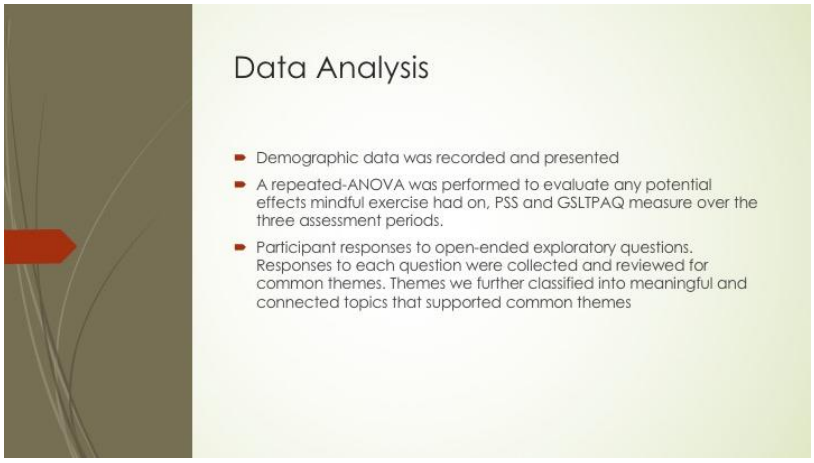

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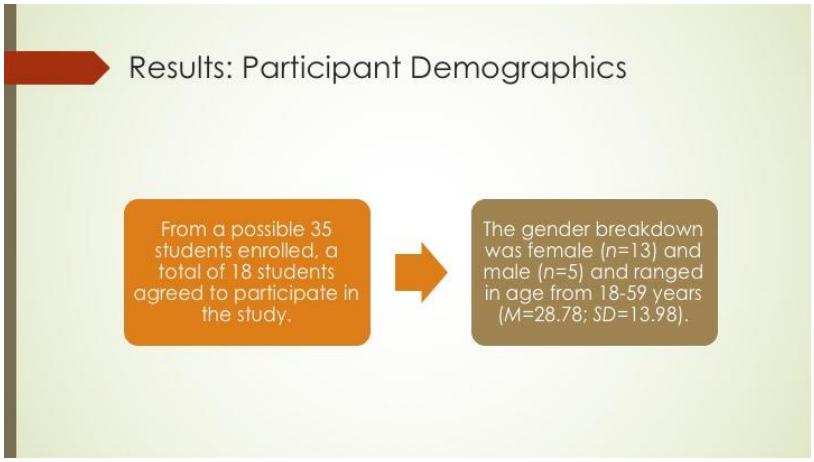

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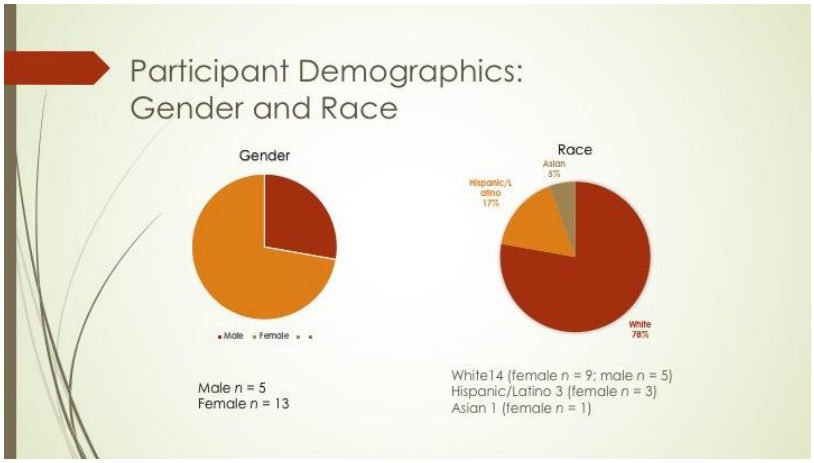

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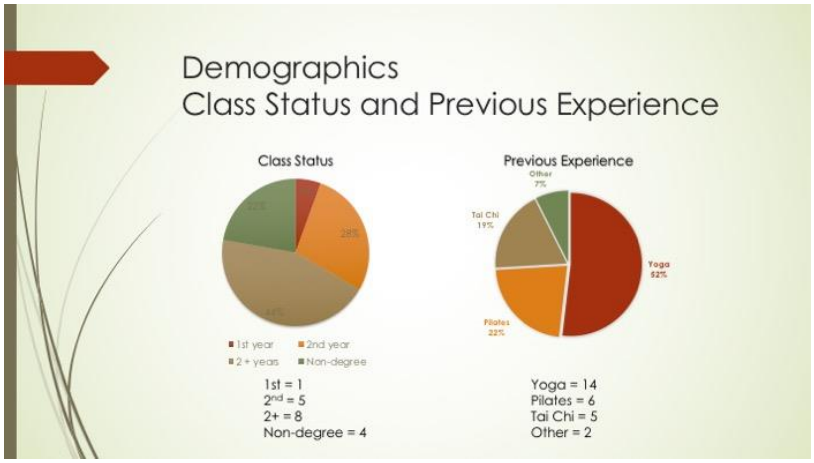

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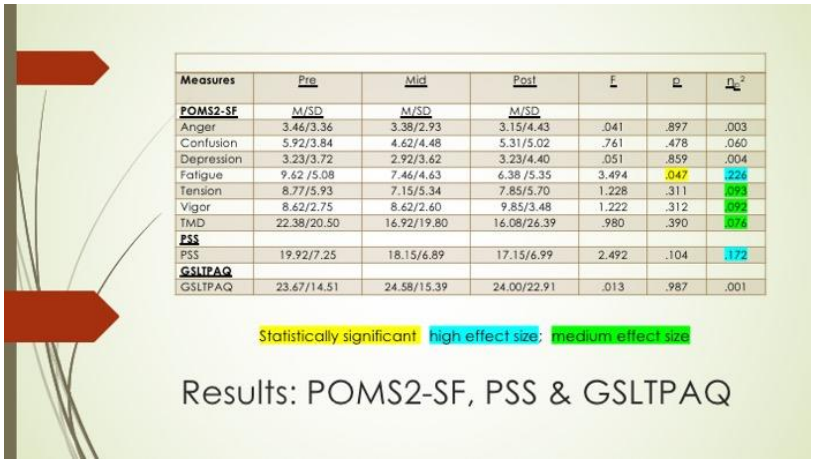

Measures	Pre	Mid	Post	F	p	η_p^2
POMS2-SF	M/SD	M/SD	M/SD			
Anger	3.46/3.36	3.38/2.93	3.15/4.43	.041	.897	.003
Confusion	5.92/3.84	4.62/4.48	5.31/5.02	.761	.478	.060
Depression	3.23/3.72	2.92/3.62	3.23/4.40	.051	.859	.004
Fatigue	9.62 /5.08	7.46/4.63	6.38 /5.35	3.494	.047	.226
Tension	8.77/5.93	7.15/5.34	7.85/5.70	1.228	.311	.093
Vigor	8.62/2.75	8.62/2.60	9.85/3.48	1.222	.312	.092
TMD	22.38/20.50	16.92/19.80	16.08/26.39	.980	.390	.076
PSS						
PSS	19.92/7.25	18.15/6.89	17.15/6.99	2.492	.104	.172
GSLTPAQ						
GSLTPAQ	23.67/14.51	24.58/15.39	24.00/22.91	.013	.987	.001

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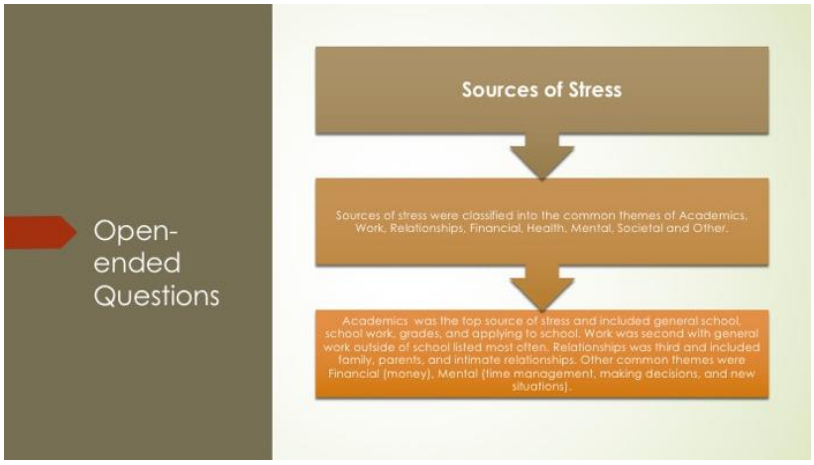

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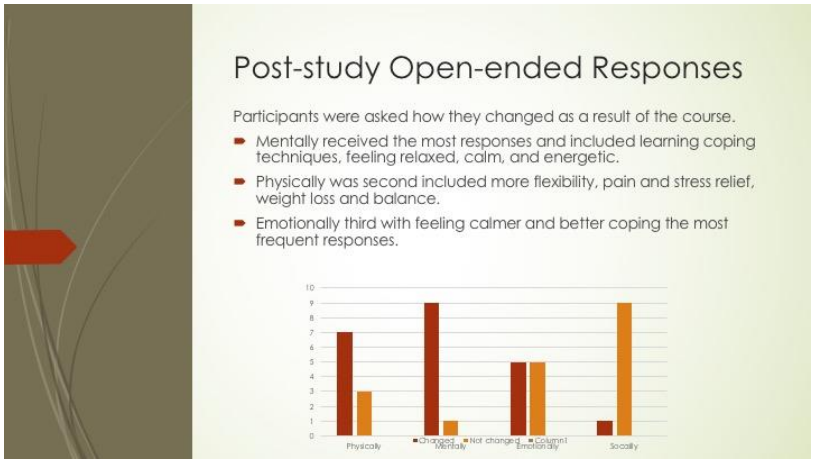

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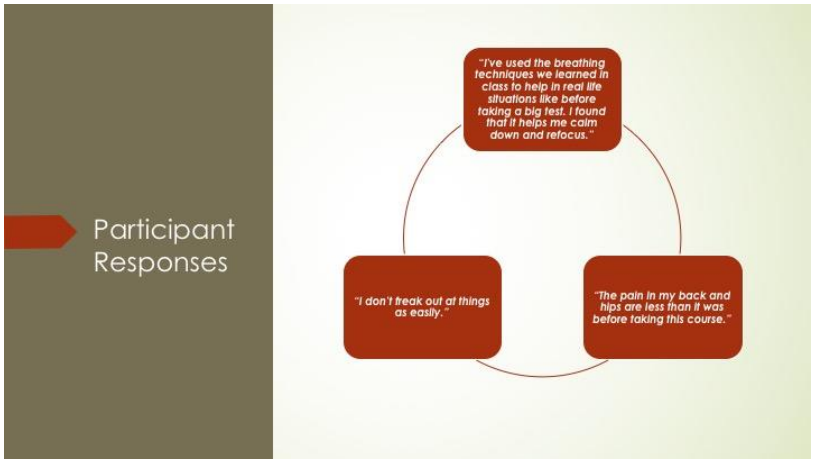


Slide 27

Most Enjoyed

- The most common participant response on enjoyment were the physical and mental aspects of the course including learning yoga techniques, having physical activity that allowed for both a mental and physical break and the feeling of relaxation.

"A chance to not worry about anything while I'm in the room. It was like an escape from all my stress that comes from my school life."

"It was very calming and helped me relax going into the weekend, so I could enter it with a clear mind."

Slide 28

Most Important

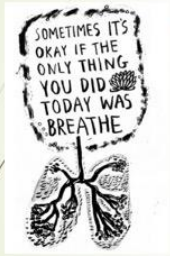
- Participants cited learning how to relax your mind through yoga, Tai Chi, Pilates, breathing techniques, and the mind/body connection as the most important aspects learned from the course.

"To take a break from the stressors in my life and take a bit of time from myself and my mind and body"

"Learning more about the mind/body connection and how strong it is"

Slide 29

Use Daily



- Participants most often said they would incorporate meditation and breathing techniques in their daily lives. The second most common response to incorporate yoga and stretching into their lives.

"The mindset that I should take myself away from the stress in my life sometimes."

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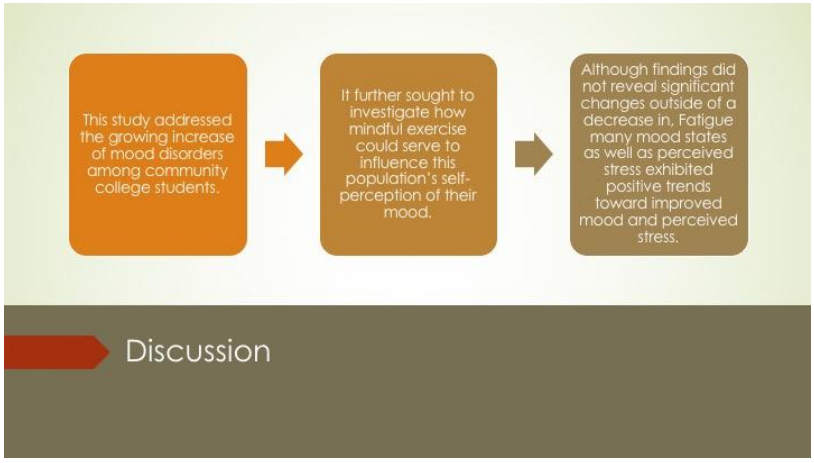

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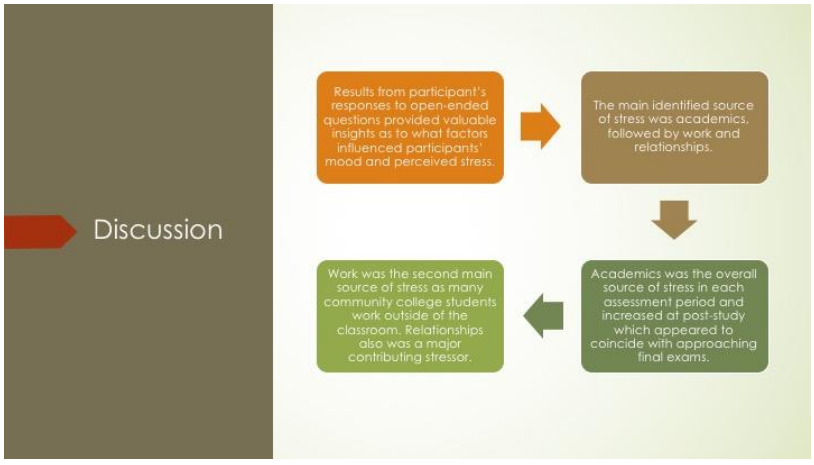

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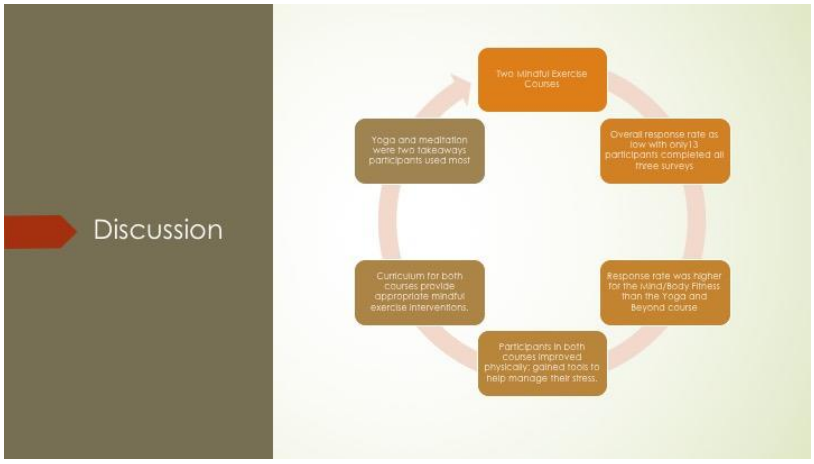

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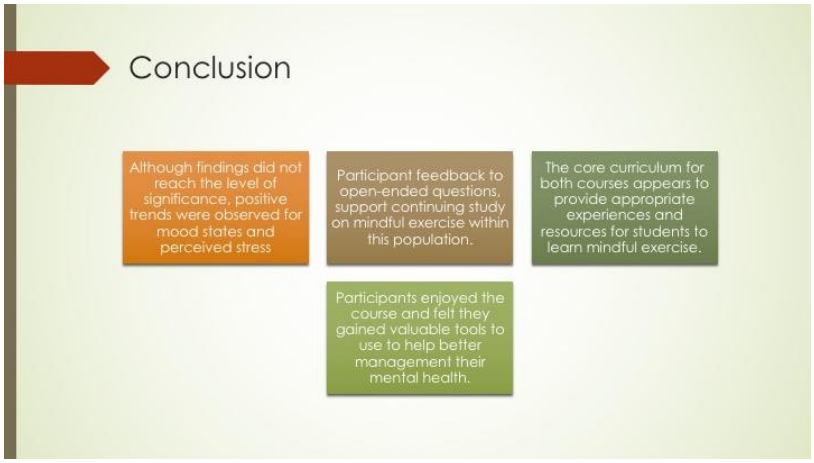

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